
A New Species of *Caryodaphnopsis* (Lauraceae) from Vietnam

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ABSTRACT. *Caryodaphnopsis bilocellata* van der Werff & Dao, collected in the Cuc Phuong National Park in Vietnam and differing from the other Asian species of the genus in having 2-celled anthers, is described.

Caryodaphnopsis is a small genus of Lauraceae, characterized by its opposite leaves and strongly unequal tepals, with the outer three much smaller than the inner three. A unique wood anatomical feature of *Caryodaphnopsis* is the presence of pyramidal, trihydrate calcium oxalate crystals in the ray cells (Richter, 1981). The genus is known from Southeast Asia (southern China, Vietnam, Laos, Cambodia, Indonesia, and the Philippines) and from the Neotropics (Brazil, Peru, Ecuador, Colombia, Panama, and Costa Rica). The Asian species have been revised by Kostermans (1974), who accepted seven species. The six neotropical species were recently described or transferred to *Caryodaphnopsis* (van der Werff & Richter, 1985; van der Werff, 1986, 1988, 1991; Zamora et al., 1988), but have never been revised. Most species, including all Asian species, have nine 4-celled stamens. However, the neotropical *C. inaequalis* (A. C. Smith) van der Werff & H. G. Richter has nine 2-celled stamens, and the neotropical *C. tomentosa* van der Werff has only six 2-celled stamens. Such variation in stamen configuration within the same genus is unusual among Lauraceae, but has been reported in several genera (van der Werff & Richter, 1985). We attach more importance to the opposite leaves, strongly unequal tepals, and the wood anatomy for generic delimitation and accept the variation in stamen numbers and locelli numbers in *Caryodaphnopsis*.

During recent fieldwork in Vietnam, a species of *Caryodaphnopsis* was found that differed from the other Asian species in having nine 2-celled, and not 4-celled, stamens; its description follows here.

Caryodaphnopsis bilocellata van der Werff & Dao, sp. nov. TYPE: Vietnam. Ninh Binh Province: Cuc Phuong National Park, *H. van der Werff et al.* 14250 (holotype, MO; isotypes, HN, KUN, QRS). Figure 1.

A congeneris asiaticis antheris bilocellatis recedit.

Trees, 25 m tall. Twigs terete, glabrous; terminal buds glabrous. Leaves opposite, chartaceous, elliptic or ovate-elliptic, 7–18 × 3–9 cm, glabrous on both surfaces, the base obtuse or acute, the apex acute, smaller leaves trinerved, larger leaves slightly triplinerved with the basal lateral veins leaving the midrib ca. 3 mm from above the base of the leaf, the lower surface glaucous, midrib and lateral veins slightly impressed on the upper surface, raised on the lower surface, tertiary venation immersed on both surfaces, petioles 10–14 mm long, glabrous. Inflorescences axillary, 5–15 cm long, glabrous, paniculate-cymosely branched. Flowers hermaphrodite, glabrous, green. Tepals 6, the outer 3 triangular, scale-like, ca. 0.4 mm long, the inner 3 broadly triangular, ca. 1.7 mm long, erect with the tip incurved, glabrous on the outer surface, sparsely pubescent on the inner surface; stamens 9, 2-celled, the outer 6 ca. 0.8 mm long, the filaments ca. 0.4 mm long, pubescent, the anthers glabrous, the locelli opening introrse; inner 3 stamens opening extrorse, 1 mm long, the filaments 0.3 mm long, pubescent, with 2 globose glands attached near the base of the anther; staminodia 3, ca. 0.5 mm long, dorsally pubescent, pressed against the ovary, with a triangular tip; ovary glabrous, 1 mm long, with a slender style; receptacle shallow, glabrous inside. Fruit unknown. Flowers April.

Floral measurements were taken from alcohol-preserved material, and floral size of dried flowers will be smaller (for instance, length of inner tepals 1.2 mm).

Vegetatively, *Caryodaphnopsis bilocellata* is quite similar to *C. metallica* Kostermans and *C. henryi* Airy Shaw and shares with those species the mostly

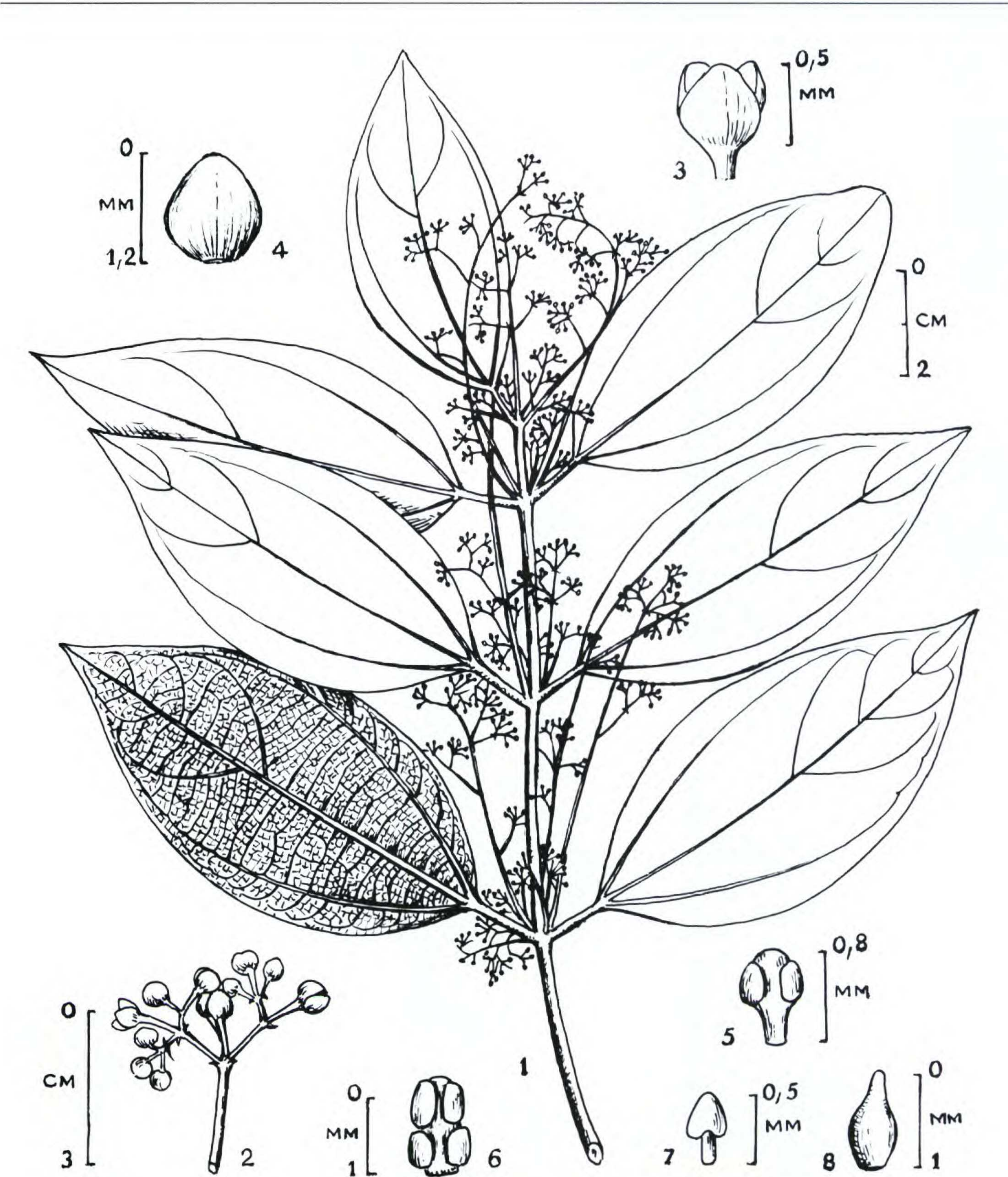


Figure 1. *Caryodaphnopsis bilocellata* van der Werff & Dao. —1. Habit. —2. Detail of inflorescence. —3. Flower showing outer tepals. —4. Inner tepal. —5. Outer stamen. —6. Inner stamen with basal glands. —7. Staminode. —8. Pistil.

glabrous leaves, twigs, inflorescences, and flowers. However, the flowers of *C. henryi* have, at maturity, spreading tepals with the inside of the tepals and the stamens readily visible. *Caryodaphnopsis henryi* also has some scattered hairs on inflorescences and flowers, which are lacking in *C. bilocellata*. The flowers of *C. metallica* have tepals with a dense indument on the inner surface, and this indument is readily visible even in half-open flowers; the te-

pals in this species are also erect to spreading and are not incurved as in *C. bilocellata*. The other Asian species differ vegetatively from the new species in the presence of indument on flowers, inflorescences, twigs, or leaves. The most commonly collected species, *C. tonkinensis* (Lecomte) Airy Shaw, has larger flowers (inner tepals ca. 2.5 mm long in dried specimens) that are obviously pubescent on the outside.

The only other species of *Caryodaphnopsis* with nine 2-celled stamens is the neotropical *C. inaequalis*. We do not consider this species to be a close relative of *C. bilocellata* because of differences in leaf venation (trinerved or triplinerved in *C. bilocellata*, pinnately veined in *C. inaequalis*) and distribution (northern Vietnam for *C. bilocellata*, lowland Brazil and Peru for *C. inaequalis*). We think that the reduction of 4-celled stamens to 2-celled stamens has taken place at least twice in *Caryodaphnopsis*, once in the Neotropics and once in Asia.

Paratype. VIETNAM. **Ninh Binh Province:** Cuc Phuong National Park, *van der Werff et al.* 14195 (HN, MO, QRS).

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specimens from Asia available for study. The illustration was made by the second author.

Literature Cited

- Kostermans, A. J. G. H. 1974. A monograph of *Caryodaphnopsis* A. Shaw. *Reinwardtia* 9: 123–137.
- Richter, H. G. 1981. Anatomie des sekundären Xylems und der Rinde der Lauraceae. *Sonderb. Naturwiss. Vereins Hamburg* 5: 1–148.
- Werff, H. van der. 1986. A new species of *Caryodaphnopsis* (Lauraceae) from Peru. *Syst. Bot.* 11: 415–418.
- . 1988. Eight new species and one new combination of neotropical Lauraceae. *Ann. Missouri Bot. Gard.* 75: 402–419.
- . 1991. New species of Lauraceae from Ecuador and Peru. *Ann. Missouri Bot. Gard.* 78: 409–423.
- & H. G. Richter. 1985. *Caryodaphnopsis* Airy Shaw, a genus new to the Neotropics. *Syst. Bot.* 10: 166–173.
- Zamora, N., L. J. Poveda A. & E. Canessa A. 1988. Una nueva especie de *Caryodaphnopsis* Airy Shaw (Lauraceae) para la Región Neotropical. *Ann. Missouri Bot. Gard.* 75: 1160–1166.